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Thank you for choosing EMM Labs...

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Safety Instructions

Prior to Installing your new EMM Labs product please read the following safety instructions:

- Read and follow all instructions.
- Keep these instructions.
- Do not use or install product near any sources of water, rain and/or moisture.
- Clean using only a dry cloth.
- Install only in accordance with the manufacturer's instructions.
- Refer all servicing to approved service personnel.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not install product outdoors or in direct sunlight.
- Leave at least 10cm or 4 inches around product to ensure proper ventilation.
- Do not place product near strong electrical or magnetic radiation/emissions or near a power amplifier.

This EMM Labs product must be connected to a mains socket outlet with a protective earthing connection (grounding pin).

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO WATER OR MOISTURE.

EEC: This product has been designed and tested to comply with the limits set out in EN55013, EN55020 and EN 60065:2009 (electrical safety).

CE

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CAUTION

This product is a Class 1 laser product, but this product contains a laser diode higher than Class 1. To ensure continued safety do not remove any covers or attempt to gain access to the inside of the product. Refer all servicing to qualified personel. The following caution label appears on your unit on the rear panel:

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure. The use of optical instruments with this product will increase eye hazard.

Information To The User

Alteration or modification carried out without appropriate approval may invalidate the user's right to operate the equipment.

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Warranty

EMM Labs warrants the XDS1 V2 product against defects in material and workmanship under normal use and service for a period of time specified by the product's serial number from the date of first delivery to the owner. The warranty time period is 1 year for the drive unit and associated drive electronics. 5 years for all other parts. Warranty is limited to the original owner and is non-transferable.

EMM Labs will pay for return shipping charges back to the owner when the product is sent to EMM Labs within the first 90 days after purchase (US and Canada end-users only). Otherwise, owner will be responsible for all shipping charges to and from EMM Labs.

For all warranty claims, a copy of the original invoice must accompany the product.

Opening the product or modifying it in any way by the owner, including but not limited to cryogenic treatment, will void any warranty.

Please contact EMM Labs *(support@emmlabs.com)* for RMA number and shipping instructions before shipping any product to EMM Labs.

EMM Labs products are sold worldwide through authorized dealers with restricted territories. EMM Labs product purchased from non-authorized dealers or from a dealer selling outside his / her authorized territory will automatically void product warranty.

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XDS1 V2 CD/SACD PLAYER

The XDS1 V2 is EMM Lab's multi-format high performance digital player for CD and stereo SACD. It has evolved from EMM Labs acclaimed converter and transport systems which are used worldwide in professional studios to create some of the finest recordings.

The XDS1 V2 can also can as a stand alone reference converter for other digital sources using its new built in USB, AES, COAXIAL and TOSLINK interfaces.

The XDS1 V2 has EMM Lab's:

- All New Digital Input System allowing it to be use as a stand alone reference DAC.
- Latest Generation modular MDAT algorithm to up-sample and condition digital audio to twice the SACD/DSD sample rate.
- Latest MCLK modular reference master clock.
- X-Drive metal drive system.
- Latest X-Power power system.
- Latest MFAST technology that gets rid of digital source jitter.

The XDS1 V2 is the culmination of years of research and development resulting in EMM Labs finest all in one CD/SACD player to date.

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Features & Specifications

Supported disc formats:

- Redbook CD
- Stereo SACD

Analog Outputs:

- Balanced (XLR)
  Output Line Level (0dBfs signal on AES/EBU input): 5V
  Output Impedance: 300Ω
- Un-Balanced (RCA)
  Output Line Level (0dBfs signal on AES/EBU input): 2.5V
  Output Impedance: 150Ω

Digital Inputs:

- Up to 24bit wordlength on all digital inputs
- AES/EBU PCM (44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, 192kHz)
- COAXIAL PCM (44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, 192kHz)
- TOSLINK PCM (44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, 192kHz)
- USB PCM (44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, 192kHz)
- USB also supports DSD streaming

Digital Outputs:

- AES/EBU (XLR) PCM digital audio output for CD and SACD
- EMM Labs OptiLink

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Features & Specifications

System:

- System control via serial RS-232
- USB data port for firmware upgrades

Power supply

- Power factor corrected
- Factory set to 100V or 115V or 230V, 50/60Hz operation
- Power consumption: 45W

General

- Dimensions W x D x H: 435 x 400 x 145mm
- Weight: 17kg

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Front Panel & Functions

1. *Standby/Power-Save button:*
   Toggles the operation between on and power-save mode. In power save mode the remote control and all front panel functions become inactive.
2. *XDS1 V2 drive Tray*
3. *XDS1 V2 Display:*
   Display can be dimmed or turned off using the the remote DISC button.
4. XDS1 V2 Front Panel Buttons and Indicators:

   - S -> SOURCE: Toggles between CD/SACD playback, AES, TOSLINK, COAXIAL and USB inputs.

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Front Panel & Functions

4. XDS1 V2 Front Panel Buttons and Indicators (cont'd):

- ⏏/■ -> EJECT/STOP: Stops playback. Pressing stop a second time or when the drive is already in stop mode ejects the tray.
- M -> MODE: To switch between the SACD and CD layers of a hybrid SACD. Works only when the drive is in stop mode.
- ▶/II -> PLAY/PAUSE: Starts or Pauses playback.
- Φ -> PHASE: Toggles polarity inversion that is performed in the digital domain.
- A -> ALT: Function is only for machine service/diagnostic. Disabled.
- -> REPEAT: This buttons toggles through 3 states:
  Repeat Track – repeats current track
  Repeat All – repeats entire disc
  Repeat Off - turns repeat function off
- |◀◀ -> PREVIOUS: Jumps back a track. Press and hold to enter fast rewind mode. In this mode pressing the PREVIOUS button immediatly a second and third time causes the rewind speed to increase. To exit press PLAY.
- ▶▶| -> NEXT: Jumps ahead a track. Press and hold to enter fast forward mode. In this mode pressing the NEXT button immediatly a second and third time causes the forward speed to increase. To exit press PLAY.

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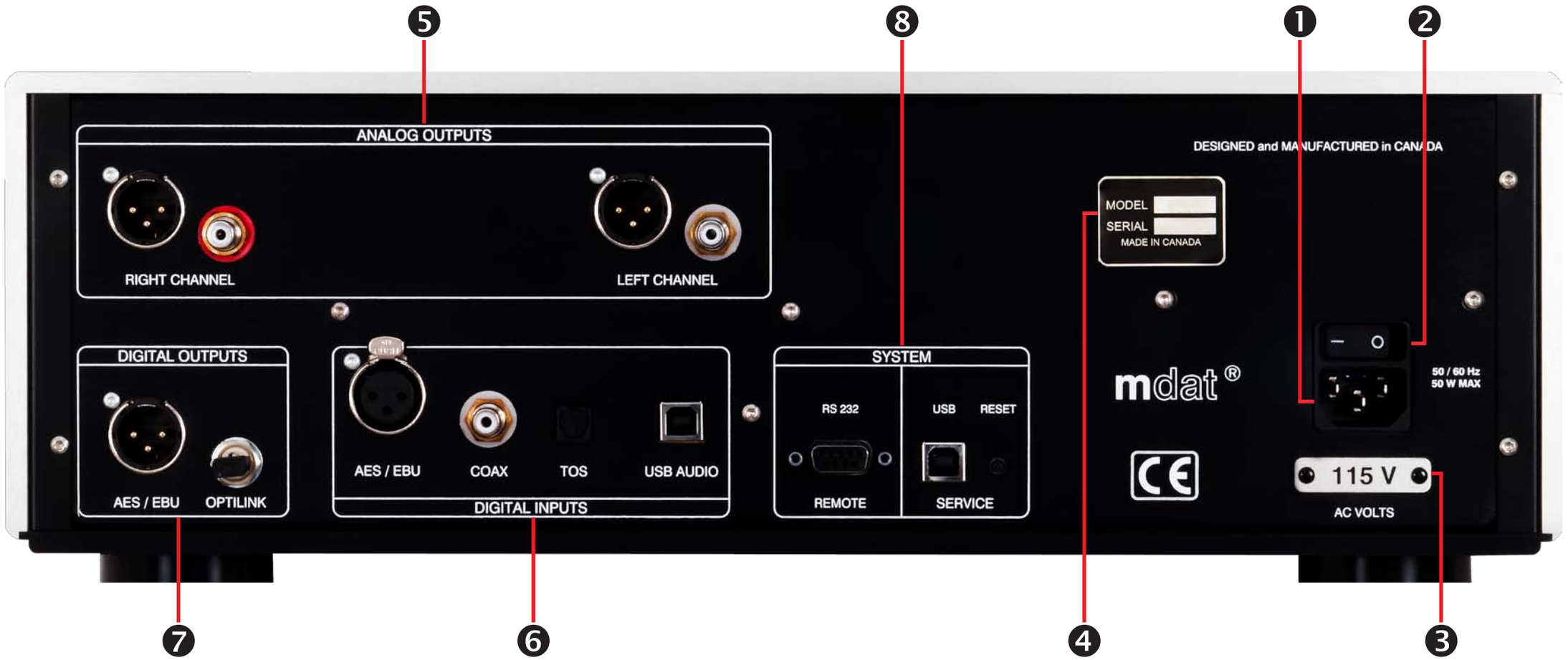
Rear Panel & Functions



1. *Main Power connector*
2. *Main Power Switch*
3. *Product VOLTAGE indicator:*
   Indicates working voltage of the XDS1 V2. Only use with indicated line voltage.
4. *Product model and serial number indicator:*
   Warranty void if model/serial number indicator is not attached to unit, missing or damaged whereby serial number cannot be seen.

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Rear Panel & Functions

5. *Analog Outputs:*
   - Left and Right Balanced (XLR) Connectors
   - Left and Right Un-Balanced (RCA) Connectors

6. *Digital Inputs:*
   - USB Audio: USB Audio format PCM and DSD digital input
   - AES/EBU: AES/EBU (XLR) format PCM digital input
   - COAX: COAXIAL (RCA) format PCM digital input
   - TOSLINK: TOSLINK format PCM digital input

7. *Digital Outputs:*
   - AES/EBU: AES/EBU (XLR) PCM digital audio output for CD and SACD
   - Optilink: EMM Labs OptiLink for interfacing with other EMM Labs products

8. *System:*

   Remote:
   - RS232 Remote: RS232 control port

   Service:
   - USB data port for firmware upgrades (see separate USB update instructions)
   - RESET **button used to temporarily access the backup firmware.** Only for diagnostic purposes. Should not be used during normal operation.

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Connecting & Operation

Please see next page with regards to installing the XDS1 V2 USB Audio drivers.

1. Connect the included power cable from the XDS1 V2's power connector to a free power receptacle.
2. Connect the appropriate digital source connections up to the XDS1 V2's digital inputs using the appropriate high quality digital audio and USB cables.
3. Connect the appropriate analog outputs of the XDS1 V2's to your pre-amp or integrated amplifier.
4. Turn on the XDS1 V2 using the main power switch and select the CD/SACD player or a digital input by pressing the SOURCE selector button or using the remote.
5. Press the EJECT button to eject the CD/SACD tray and insert a CD/SACD onto the tray. Press the EJECT button once again for the tray to close. Once loaded press the PLAY button to start playing CDs or SACDs.
6. Select a digital input where a digital source is connected. The XDS1 V2 will lock to the appropriate sample frequency and display the samplerate on it's display. The conversion process will start and you will be able to listen to music.
7. The XDS1 V2 remembers the last digital input it was switched too prior to being switched off.

Please note that, especially for high resolution audio, you must use proper high quality TOSLINK, certified USB 2.0, 75Ω COAXIAL and 110Ω AES cables. Using the wrong type of cables, low quality cables or cables that do not have the proper specification will cause all kinds of issues while playing back digital audio.

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Connecting & Operation

USB Audio Input:

1. First, use only well-sheilded certified USB 2.0* cables to connect the XDS1 V2's USB Audio input to any USB digital audio source component (computer, laptop, media server etc.)
2. The XDS1 V2's USB Audio interface uses the B-type USB connector similar to connectors used on printers. Please see image below:

3. Select the USB Audio input using front panel input selector buttons.
4. For MAC OSX systems, no driver is needed. OSX has the appropriate USB driver already installed.
5. For Windows XP, Vista (32 or 64bit) and Windows 7 (32 or 64bit) systems install the provided USB driver located on the software CD in folder named "XDS1 V2 USB Audio Driver" and run the "setup.exe" file. Read and follow the installation instructions.
6. Kernal, ASIO and WASAPI (Vista and Windows 7) drivers will be installed.

*Not using proper cables will cause audio issues between digital source and DAC.

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Connecting & Operation

7. For Windows Media Player playback; in Windows Control Panel set the default sound playback to the XDS1 V2 USB Audio device (XMOS XS1-L1 Audio).

8. In general for most audio applications you will be able to select the XDS1 V2 USB Audio device (XMOS XS1-L1 Audio) from within the application and choose the appropriate driver Kernal, ASIO or WASAPI.

DSD Audio

1. The XDS1 V2 currently supports DSD audio streaming and conversion over USB using DoP 1.0 specification.

2. Currently there are many different media players that support DSD audio file playback. Some of them that have been fully tested in-house eg. JRiver for Windows, and Audivarna and Pure Music for OSX.

3. Every media player will have specific software installation instructions and setup procedures for enabling DSD streaming. Please consult the specific software manual.

4. Some software manufacturers have also provided quickstart and software setup guides online or available for you to download. If available EMM Labs will post links to this on the XDS1 V2 support website.

5. When setup correctly and DSD data is detected, the XDS1 V2 will display DSD on its front display window as the digital audio format.

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Infrared Remote Control

DISC : This function toggles the front panel display to different preset brightness settings including turning the display off.

INPUT : Toggles between CD/SACD playback and all the digital inputs. Press the AES button to switch between AES and COAXIAL inputs. Press the TOS button to switch between TOSLINK and USB inputs.

Numeric Buttons : These buttons can be used to directly access any track on the CD or SACD directly. To access tracks higher then 9 see examples:

- Track 10 press and hold 1 until you see the display change to 10 then press 0.
- Track 23 press and hold 2 until you see the display change to 20 then press 3.

MODE : To switch between the SACD and CD layers of a hybrid SACD. Works only when the drive is in stop mode.

REPEAT : This buttons toggles through 3 states:

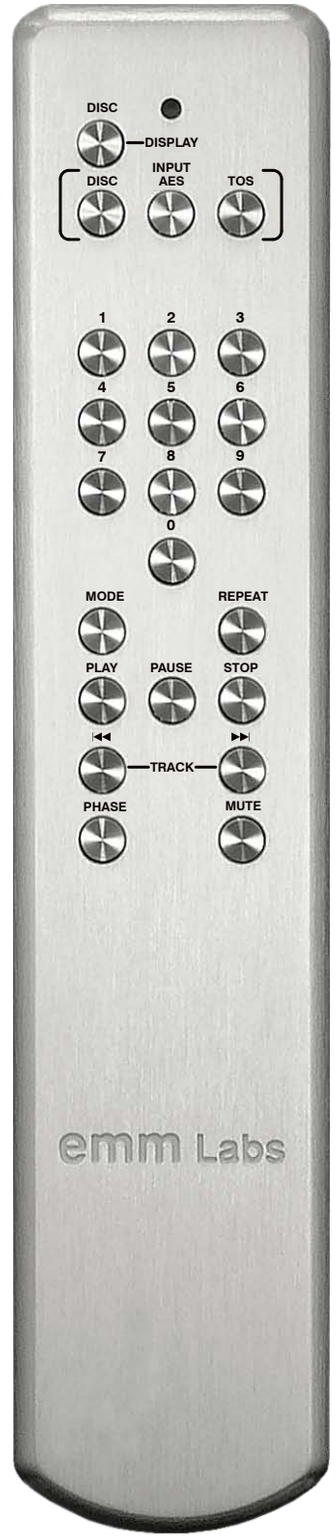
- Repeat Track – repeats current track
- Repeat All – repeats entire disc
- Repeat Off - turns repeat function off

PLAY : Starts or Pauses Playback

PAUSE : Pauses or Starts Playback from Pause.

STOP : Stops Playback. Pressing stop a second time or when the drive is already in stop mode ejects the tray.

|<< : Jumps back a track. Press and hold to enter fast rewind mode. In this mode pressing the button immediatly a second and third time causes the rewind speed to increase. To exit press PLAY.



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Infrared Remote Control

>>|	:	Jumps ahead a track. Press and hold to enter fast forward mode. In this mode pressing the button immediatly a second and third time causes the forward speed to increase. To exit press PLAY
PHASE	:	Toggles polarity inversion performed in the digital domain.
MUTE	:	Mutes the XDS1 V2 analog outputs.

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Serial Remote Control (RS232)

The XDS1 V2 is equipped with a 9-pin RS232 port for system remote control via a serial cable (not provided by EMM Labs). Please use a standard RS232 cable. Do not use a null model cable, as this will not work. RS232 communication port settings:

- 19,200 baud
- 8 bits
- 1 stop bit
- no flow control
- no parity bit

Commands to the XDS1 V2

All commands sent to the XDS1 V2 consist of 3 ASCII characters (all lowercase) followed by a carraige return or <CR>. Repeating a <CR> will repeat the last command sent. Received commands are not stored in a stack. They need to be sent in intervals of at least 50ms to allow enough time for the XDS1 V2 to execute a command before receiving the next one.

Command	Function
ply	Start Playback
pse	Pause Playback
stp	Stop Playback
mod	Toggles through the SACD playback layers. Only works when not playing.
rpt	Toggles through the different repeat modes
nxt	Jumps ahead a track
prv	Jumps back a track

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Commands to the XDS1 V2 (cont`d)

Command	Function
dim	Toggles through display brightness settings
try	Tray open and close
tr(x)	tr followed by a single digit (x) to jump to a particular track. See example.
tr(x) example: a) Jump to track 5 : tr0<CR>, tr5<CR> b) Jump to track 12 : tr1<CR>, tr2<CR>	
pol	Toggles polarity inversion performed in the digital domain.
src	Toggles between CD/SACD playback and all digital inputs.
dsc	Selects CD/SACD Player
aes	Selects the AES digital input
tos	Selects the TOSLINK digital input
cox	Selects the COAXIAL digital input
usb	Selects the USB digital input

Status bytes sent from XDS1 V2

The XDS1 V2 sends back 9 Bytes terminated with a <CR> whenever any status changes.

<Byte 0><Byte 1><Byte 2><Byte 3><Byte 4><Byte 5><Byte 6><Byte 7><Byte 8><CR>

Byte 0 Seconds ones in ASCII
Byte 1 Seconds tens in ASCII
Byte 2 Minutes ones in ASCII
Byte 3 Minutes tens in ASCII
Byte 4 Hours ones in ASCII

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Status bytes sent from XDS1 V2 (cont`d)

Byte 5 Track number ones in ASCII
Byte 6 Track number tens in ASCII

Bytes 7 through 9 are status bytes where each bit represents a machine status flag. 0 indicates that the particular bit is set.

Byte 7

bit 0 - 1 when "Reading" indicator is on (front panel)
bit 1 - 1 when "Repeat Track" indicator is on(front panel)
bit 2 - 1 when "Repeat All" indicator is on (front panel)
bit 3 - 1 when "CD" indicator is on (front panel)
bit 4 - 1 when "SACD 2CH" indicator is on (front panel)
bit 5 - 1 when "SACD MCH" indicator is on (front panel)
bit 6 - Not used
bit 7 - Not used

Byte 8

bit 0 - Reserved
bit 1 - Not used
bit 2 - Not used
bit 3 - 1 when "No Disc" indicator is on (front panel)
bit 4 - 1 when internal clock selected
bit 5 - Not used
bit 6 - 1 when in pause
bit 7 - 1 when clock is locked

Byte 9 <CR> (x0D)

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